

Claims:

1) A one-step process of creating an interpenetrating polymer network sheet 12 bonded to a backing material 40 comprising the steps of a) casting a liquid polymer formulation 10 as a coating 11 onto a carrier substrate 20, b) applying a microporous polymer sheeting membrane 30 to the surface of the coating 11 and allowing or causing said liquid polymer layer 10 to impregnate said microporous polymer membrane 30, c) applying a backing material 40 to the distal surface 25 of the impregnated membrane 30, and (d) causing a bond to form between the backing material 40 and the impregnated membrane 30 to form a composite sheet 52, and e) solidifying the liquid polymer formulation.

2) The process of Claim 1, wherein the liquid polymer formulation 10 is polydimethylsiloxane.

3) The process of Claim 1, wherein the microporous polymer membrane 30 is expanded polytetrafluoroethylene.

4) The process of Claim 1 wherein the backing material is textile fabric 40.

5) The process of Claim 1, wherein the backing material is non-textile fabric or foam.

6) The process of Claim 1, wherein the bond between the backing material 40 and the distal or upper surface of the membrane 30 is enhanced by exposure to vacuum by means of a vacuum roller device 100 placed in contact

with the distal or upper surface 35 of the backing material 40 prior to solidification of the liquid polymer formulation.

7) The process of Claim 1, wherein the liquid polymer formulation layer 10 is polydimethylsiloxane, the microporous polymer membrane 30 is expanded polytetrafluoroethylene, and the backing material 40 is textile fabric.

8) The process of Claim 1, wherein the liquid polymer formulation layer 10 is polydimethylsiloxane, the microporous polymer sheet 30 is expanded polytetrafluoroethylene and the backing material 40 is a non-textile material.

9) A process for producing interpenetrating polymer networks bound in situ to various types of porous backing materials such as textiles including the following improvements a) Single-pass process, b) No second coating of PDMS required to act as glue, c) No solvents or other processing aids required, d) No additional oven length needed to effect the required dwell time, e) Increased line speed since the PDMS need not be fully crosslinked by the end of the process, g) The carrier substrate 20 need only be coated with a release surface on one side.

10) A single-pass method of making a wound dressing or scar management product comprising the steps of forming a layer 10 of liquid PDMS onto a carrier substrate 20, laying a layer 30 of ePTFE on top of the liquid PDMS layer 10, said layer of ePTFE having small pores,

impregnating the ePTFE layer 30 with the liquid PDMS by capillary wicking through the small pores in the ePTFE layer which act as capillaries to bring the liquid PDMS to the upper surface of the membrane 30 and form an IPN sheet 12,

bonding the upper surface 25 of the IPN sheet 12 to a textile fabric 40 to form a composite fabric sheet 52 so that garments worn over the wound dressing slide easily over the textile fabric 40 and any tendency of sheet 12 to roll up or cling to such garments is reduced or eliminated,

vulcanizing the IPN sheet 12 after the textile fabric 40 has been applied to the IPN sheet 12,

applying a continuous pressure to the fabric composite sheet 52 as it passes through tunnel oven 60 during the curing process by following a serpentine path through the oven over one idler-roll, under the next, over the next, etc., and by placing S curves in the web path in the oven to form an effective bond between IPN sheet 12 and the textile fabric 40.

11) The process of claim 10, wherein the ePTFE membrane 30 is pulled over fabric 40 and both materials are brought into contact with the liquid PDMS at the same time.

12) The process of claim 10, wherein vacuum is applied to the upper surface 35 of textile fabric 40 prior to entry into the oven 60 to enhance the bond between the IPN sheeting 12 and the textile fabric 40.

13) A one-step process of creating an interpenetrating polymer

network sheet 12 bonded to a backing material 40 comprising the steps of a) casting a liquid polymer formulation 10 as a coating 11 onto a carrier substrate 20, b) applying a lamination of microporous polymer sheeting membrane and backing material 110 to the surface of the coating 11 and allowing or causing said liquid polymer layer 10 to impregnate said microporous polymer membrane, and c) solidifying the liquid polymer formulation.

14) The process of Claim 13, wherein the liquid polymer formulation 10 is polydimethylsiloxane.

15) The process of Claim 13, wherein the microporous polymer membrane 30 is expanded polytetrafluoroethylene.

16) The process of Claim 13, wherein the backing material is textile fabric 40.

17) The process of Claim 13, wherein the backing material is non-textile fabric or foam.

18) The process of Claim 13, wherein the liquid polymer formulation layer 10 is polydimethylsiloxane, the microporous polymer membrane 30 is expanded polytetrafluoroethylene, and the backing layer 40 is textile fabric.

19) The process of Claim 13, wherein the liquid polymer formulation layer 10 is polydimethylsiloxane, the microporous polymer sheet 30 is expanded polytetrafluoroethylene, and the backing layer 40 is a non-textile material.

20) A process for producing interpenetrating polymer networks

bound in situ to various types of porous backing materials such as textiles including the following improvements a) Single-pass process, b) No second coating of PDMS required to act as glue, c) No solvents or other processing aids required, d) No additional oven length needed to effect the required dwell time, e) Increased line speed since the PDMS need not be fully crosslinked by the end of the process, g) The carrier substrate 20 need only be coated with a release surface on one side.

21) A single-pass method of making a wound dressing or scar management product comprising the steps of forming a layer 10 of liquid polymer formulation onto a carrier substrate 20, laying a layer 30 of microporous polymer sheeting membrane laminated to a backing material on top of the liquid polymer formulation layer 10, impregnating the microporous polymer sheeting membrane layer 30 with the liquid polymer formulation by capillary wicking through the small pores in the microporous polymer sheeting forming an interpenetrating polymer network sheet 12, and solidifying the liquid polymer formulation.

22) The process of Claim 21, wherein the liquid polymer formulation 10 is polydimethylsiloxane.

23) The process of Claim 21, wherein the microporous polymer membrane 30 is expanded polytetrafluoroethylene.

- 24) The process of Claim 21, wherein the backing material is textile fabric 40.
- 25) The process of Claim 21, wherein the backing material is non-textile fabric or foam.
- 26) The process of Claim 21, wherein the liquid polymer formulation layer 10 is polydimethylsiloxane, the microporous polymer membrane 30 is expanded polytetrafluoroethylene, and the backing layer 40 is textile fabric.
- 27) The process of Claim 21, wherein the liquid polymer formulation layer 10 is polydimethylsiloxane, the microporous polymer sheet 30 is expanded polytetrafluoroethylene, and the backing layer 40 is a non-textile material.